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Before the Subcommittee on Transportation,
Committee on Appropriations,
House of Representatives



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Mr. Chairman and Members of the Subcommittee:

We are pleased to be here to discuss the Federal Aviation Administration's (FAA) efforts to modernize and upgrade its automated systems. My testimony today will cover two FAA projects. One, now expected to cost over \$730 million, is intended to improve voice communications at air traffic control facilities. The other, currently estimated to cost up to \$1.5 billion, is to provide administrative data-processing support over a 10-year period.

The first FAA project I will discuss is the Voice Switching and Control System (VSCS). Air traffic controllers require a system for both ground-to-ground and air-to-ground voice communications. VSCS, currently estimated to cost over \$730 million, is intended to provide a computer-controlled voice communications system that is flexible, expandable, and highly reliable. It is to be implemented at 23 major en route centers, which control air traffic between airports, and is expected to provide communications for the controller workstations that will serve up to 430 positions at each center.

VSCS is to provide voice communications for new controller workstations that are being developed under FAA's Advanced Automation System, a critical element in the National Airspace System Plan. The Advanced Automation System, with its new

hardware, software, and workstations, is expected to result in many improvements, such as more efficient handling of air traffic. The new workstations, now scheduled for delivery in August 1992, cannot be used until VSCS is ready. Whether VSCS will be ready on time is uncertain because the project continues to encounter cost increases, schedule delays, and technical difficulties. Further, we are concerned that, in an effort to remain on schedule, FAA is deferring the testing needed to ensure it acquires a system that will work as intended.

In October 1986 FAA awarded VSCS prototype development contracts to Harris Corporation and American Telephone and Telegraph (AT&T) Technologies, Incorporated. Each contractor is to design, develop, and install one prototype system. FAA intends to award a production contract this November to the contractor with the better prototype system. The original estimated cost of both prototype contracts was \$67 million; this cost is now estimated to be more than \$145 million.

Total project costs have more than tripled. The estimated cost to design, develop, produce, and install the system has risen from \$220 million in 1980 to the current estimate of over \$730 million. FAA officials say the original cost estimates were too low and did not consider all relevant costs, and that the project's complexity was also underestimated by the contractors.

Both prototype contractors are encountering unanticipated technical difficulties. Their original proposals called for using off-the-shelf hardware and software. After contract award, when the contractors obtained a better understanding of the system's requirements, they learned that significant changes were required to both of their proposed hardware and software designs. In addition, both contractors underestimated the amount of software needed, and continue to find that they must develop additional software to meet requirements.

Schedules for the project have been continually delayed and FAA's estimated milestones have been questioned. For instance, the scheduled date for VSCS to be operational at the first site, once projected as 1986, is now estimated at 1991. In addition, Martin Marietta--which is under contract to FAA to provide technical and programmatic support for nearly all facets of the National Airspace System Plan--estimates later dates than does FAA for all major project milestones. For example, Martin Marietta believes that the agency's estimate for the system to be operational at the first site will slip up to 11 months. Further, the company has maintained that the prototype contractors may be striving to meet FAA's target dates at the expense of their work quality.

In fact, to avoid delaying the operation of the new controller workstations, FAA has reduced the testing required before it awards a production contract for VSCS. Independent operational testing

and evaluation of the system, originally scheduled to be performed during the project's prototype development phase, is now to be done after contract award. This testing was to verify that the system would work as intended and to demonstrate the operational effectiveness and suitability of the prototypes. In place of this independent testing, FAA plans to use, prior to November 1989, the results of partial factory acceptance testing performed by the contractors to determine whether their systems meet critical requirements. Furthermore, if time allows, FAA plans to perform additional testing to assess, to a limited degree, the operational suitability of the system. We believe this approach to testing a system as critical as VSCS is flawed because it could commit the government to buying a system that will not perform as expected. At a minimum, FAA needs to have (1) the results of complete factory acceptance testing to ensure prototypes meet system requirements; (2) an independent verification of the results of the contractors' testing, including an assessment of the prototypes under heavy work loads; and (3) an assessment of the operational suitability of the system.

The negative consequences of proceeding to production without adequately testing a system are well documented. We previously reported that FAA's lack of testing prior to committing to

production contracts contributed to delays ranging from 1 to 8 years for many of the agency's major systems.¹

Because VSCS continues to experience development problems, delays in Advanced Automation System workstation implementation are now possible. The Advanced Automation System workstation is currently scheduled for delivery to the first operational site in August 1992. To meet the terms of the Advanced Automation System contract, VSCS needs to be operational at this site 90 days before the workstation is to be delivered, or May 1992. However, Martin Marietta estimates that VSCS may not be operational until September 1992, approximately 4 months after the date required by the contract.

If the new controller workstations cannot be used because of delays in the VSCS project, the government will not have met its obligation under the Advanced Automation System contract, and could incur significant additional costs and delays. The Advanced Automation System contract contains no provision to lessen the consequences if VSCS is delayed.

Mr. Chairman, I would like to point out that the problems I have just mentioned will be described in detail in a report we plan to issue shortly. We plan to make recommendations to the

¹Microwave Landing Systems: Additional Systems Should Not Be Procured Unless Benefits Proven (GAO/RCED-88-118, May 16, 1988).

Secretary of Transportation that call for needed testing to be completed before making production decisions and for exploring possible changes to the new workstation contract that might mitigate the adverse consequences of VSCS delay.

I would now like to turn briefly to the other FAA automation project. Our review of this project has been underway only a short time, and therefore the information I will present, which was contained in a report recently sent to you, is primarily based on information provided to us by FAA.²

On February 27, 1989, FAA issued a request for proposals for its largest and most complex general-purpose data-processing acquisition to date. The Computer Resources Nucleus (CORN) Project is to provide centralized computer support for general-purpose applications at FAA headquarters, regional offices, and technical centers.

The CORN project is a major departure from FAA's traditional approach to automated data processing procurement. Because it maintains that current capacity is saturated and upgrades are no longer desirable, FAA intends to divest itself of its present in-house facilities and to procure all of its general-purpose data processing services through a single fee-for-service contract. The

²Computer Procurement: FAA's \$1.5-Billion Computer Resources Nucleus Project (GAO/IMTEC-89-44FS, March 31, 1989).

contractor is to provide, maintain, and operate facilities, equipment, software, and technical support needed to meet FAA's general-purpose data processing requirements for a 10-year period. The contractor is to own these facilities, which are to be dedicated exclusively to FAA support.

The request for proposals covers an initial 5-year period, followed by five 1-year renewals. According to FAA, the total estimated contract ceiling for the full 10 years is \$1.495 billion. FAA anticipates that the CORN contract will be awarded in late September 1989.

Information on the CORN project that we have gathered to date indicates that:

- Cost estimates rose tenfold during the first year of the project, from \$148 million to \$1.5 billion. This was partly due to the scope of the project being enlarged to include optional data processing for other Department of Transportation elements, estimated to cost \$619 million. FAA considers the estimate for implementing these options to be "very soft" because it is not based on a detailed requirements analysis or a feasibility study.
- The General Services Administration's Federal Systems Integration and Management Center (FEDSIM) maintains that

FAA does not plan to use an appropriate methodology to validate whether the vendors' proposals are accurate or realistic. FEDSIM stated that an error in validating the vendors' proposals could have "staggering cost consequences over the ten year contract life."

- FAA currently processes about 200 general-purpose applications on its in-house equipment. The CORN contractor will be responsible for making any conversions needed to run these applications on the new system. Although FAA estimates that the whole conversion process will take about 30 months, a conversion plan will not be developed until after the award of the contract, since the contractor is responsible for developing it. Until all conversions are complete, the agency plans to operate its current in-house system in parallel with CORN at an estimated cost of about \$46 million per year.
- CORN is one element of a larger FAA management information system that includes office automation and telecommunications projects. FAA is concerned that the work load involved in managing and integrating the entire system will exceed its staff resources. Therefore, FAA plans to engage an additional contractor in fiscal year 1990 to assist the agency in this work. The estimated cost of this contract is currently \$35.5 million.

It is important that the Subcommittee have adequate information on this project. Two areas that the Subcommittee may want to explore with FAA are the tenfold increase in the project's estimated cost and FEDSIM's concerns about FAA's methodology for validating vendor cost proposals.

Mr. Chairman, this concludes my prepared remarks. I will be pleased to answer any questions you or other members of the Subcommittee may have at this time.